

Elix[®] Essential 3, 5, 10, 15 Water Purification Systems

Consistently pure, reliable water quality
for optimal results



Consistently pure, reliable water quality for optimal results

Your water purification needs

Type 2 pure water with consistently pure and reliable water quality

High-quality pure water meeting the specifications for your applications

Low and predictable running costs

¹ A user-friendly system

Full control of pure water quality

Easy maintenance

The best use of laboratory space

Confidence in your water purification system supplier

Our solution: the Elix® Essential range of water purification systems

Complementary water purification techniques, including **state-of-the-art Elix® electrodeionization technology**, ensure delivery of constant- and reliable-quality Type 2 pure water.

With resistivity > 5 MΩ·cm at 25° (typically 10 -15 MΩ·cm) and TOC < 30 ppb, Elix® Essential system product water is of **better quality than double distilled water**.

With no resin packs to change, the self-regenerating Elix® electrodeionization module **lowers running costs**. Overall reduced water and electricity use also allow significant savings.

Intuitive controls simplify Elix® Essential system use, providing **just the information required**. System alert and alarm icons are shown on a color-coded backlit LCD display to clearly show message importance.

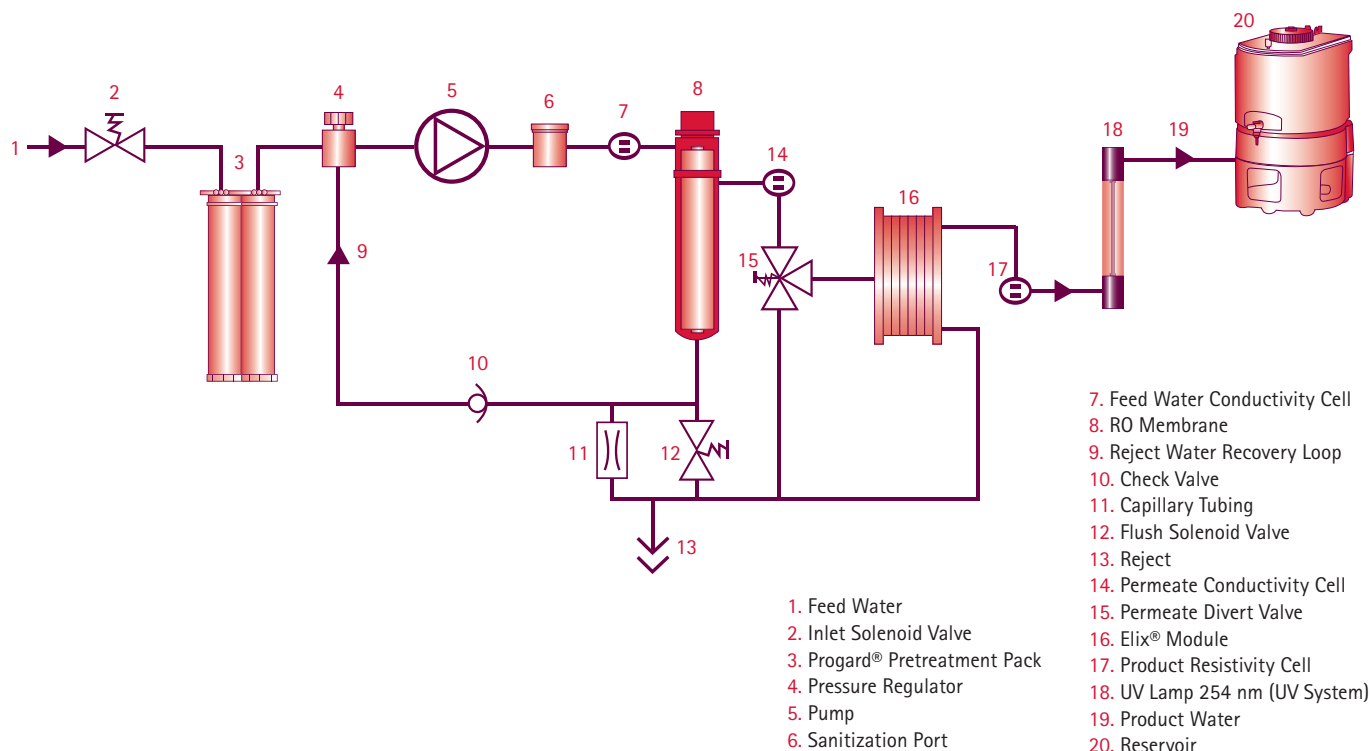
Key water quality parameters are measured by the system's **high-precision monitoring equipment**. RFID technology makes Progard® pretreatment packs fully traceable.

On the system, there is just one Progard® pretreatment pack to change and a new, **ergonomic pack locking system** lets users do this quickly and easily. Automatic functions provide additional self-maintenance.

Elix® Essential systems have a **small footprint**, enabling convenient installation on or under the bench, or on a wall. Systems provide 3,5, 10, or 15 liters of pure water per hour.

Merck Millipore is a partner you can count on. Elix® Essential systems are manufactured in an **ISO®-registered manufacturing site**, and Watercare Pact service plans offer a **full range of support**.

Elix® Essential Systems Water Purification Pathway



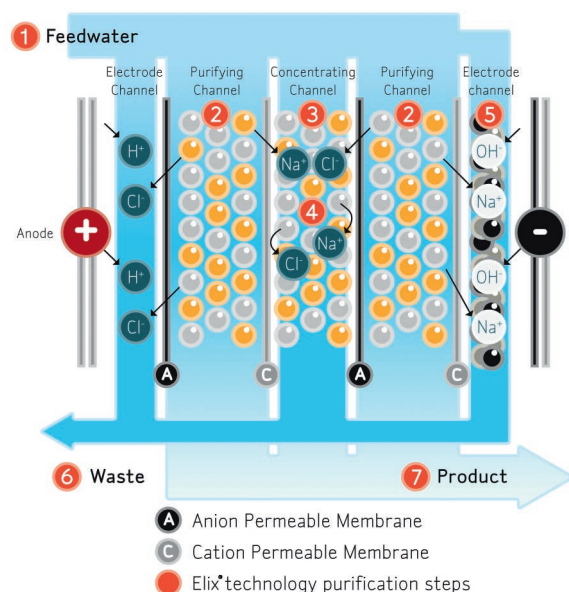
Elix® technology: constant- and reliable-quality Type 2 pure water

Type 2 pure water is one of the most common reagents. It is used by scientists, researchers, and engineers everywhere in environments as diverse as academic, hospital, and quality control laboratories. In spite of its importance, many water purification systems on the market are not able to reliably provide pure water of consistent quality in the daily volumes required by users.

In contrast to these other systems, Merck Millipore's **Elix® Essential systems** have been developed to ensure delivery of constant- and reliable-quality Type 2 water. By incorporating proven, patented Elix® EDI technology with other advanced complementary water purification techniques, Elix® Essential systems make the best use of existing purification technologies.

Elix® Essential system water purification sequence

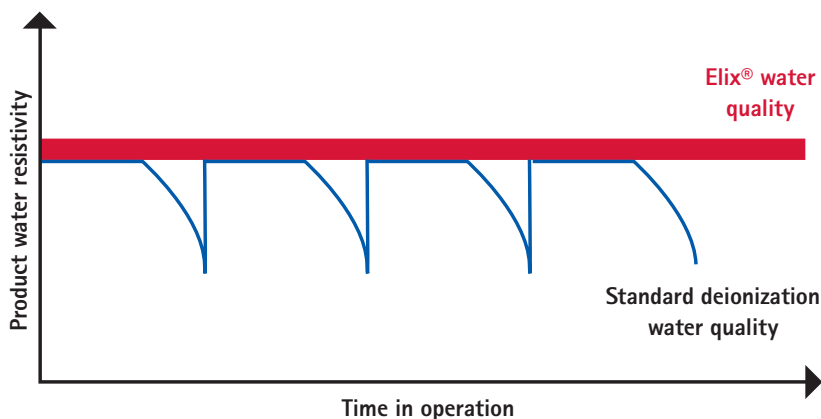
In the Elix® Essential system water purification sequence, potable tap water is first treated with a Progard® pack, and then purified by reverse osmosis to produce RO Type 3 water. This water enters the **Elix® electrodeionization module**, where ion-exchange resins are continuously regenerated by a small electrical field. This process requires only very small amounts of water and energy, and results in consistently high-quality pure water – with no need for external chemical regeneration of the resin beads. In Elix® UV systems, a bactericidal 254 nm UV lamp is available to sanitize the pure water before it is stored in a polyethylene reservoir.



Merck Millipore's Elix® module: unique technology based on anion-permeable and cation-permeable membranes; high-quality ion-exchange resin; and activated carbon beads.

Elix® Technology

Merck Millipore's current Elix® EDI module is the result of over twenty years of concentrated activity by our Lab Water Research & Development teams. Today, our extensive worldwide installed base of Elix® systems provides the assurance that Elix® EDI technology is robust, reliable and efficient: you can trust Elix® Essential systems to supply the solution to your pure water needs.



The graph shows the superiority of Elix® technology over systems using ion-exchange resin packs. Resistivity drops dramatically when packs are exhausted.

High-quality pure water to match your specifications

Consistency and reliability in pure water quality is crucial in laboratory applications. Pure water, such as the water produced by Elix® Essential systems, is used throughout the lab for:

- ▶ Feed to laboratory equipment (e.g., Milli-Q® Type 1 ultrapure water systems, weatherometers, autoclaves, glassware washers, and dissolution testing units)
- ▶ Preparation of microbiological media, buffer and pH solutions
- ▶ Histology
- ▶ Chemical reactions run in water
- ▶ Manual glassware rinsing

Regulatory bodies have defined the minimum quality requirements for pure water through specific and rigorous standards. Elix® Essential systems are designed to meet or exceed requirements as described by ISO® 3696 (Grade 2 water); ASTM® D1193 (Type II resistivity and TOC Table I specifications); and by the United States, European and Japanese Pharmacopeias for Purified Water.

With resistivity values that are greater than 5 MΩ-cm at 25 °C, and with less than 30 ppb TOC, the quality of Elix® Essential water exceeds that of double distilled water. In general, water that has been purified using Elix® technology is suitable for use with analyses at the parts per million (ppm) or high parts per billion (ppb) levels.

Low and predictable running costs

Budget-conscious users will also appreciate Elix® Essential systems for their **low and predictable running costs**:

- ▶ Integrated Elix® electrodeionization technology requires no costly resin replacement or regeneration.
- ▶ Only a single Progard® pretreatment pack is needed to remove particles, free chlorine and colloids from tap water.
- ▶ Electricity consumption is 200 times less than that of conventional distillation equipment.
- ▶ The system's efficient RO-reject water recirculation loop significantly reduces tap water use and helps extend the lifetime of the Progard® pack.
- ▶ No strong chemicals must be purchased for resin regeneration or cleaning purposes.
- ▶ There are no transportation and storage costs (as with bulky and cumbersome resin cartridges or bottled water).

User-friendly systems

Elix® Essential systems have been designed for easy, effortless operation. **Intuitive controls** on the system cabinet simplify use, and provide essential details — you see just the information you need, such as product water quality and reservoir water level. When necessary, icons inform users of any actions that should be performed (i.e., changing the Progard® pack, sanitizing the system, or taking corrective measures in case of an alert or alarm).

To ensure optimal system operation, **icons and the backlit LCD screen** change color to visually signal maintenance alerts or alarms. For example, fifteen days before the purification pack should be replaced, the Progard® icon will turn yellow. As the date for pack change approaches, the LCD screen will switch from its normal blue background color to yellow. For more important warnings, the screen will turn red to indicate an urgent action is required. When there has been no user interaction with the screen for 15 minutes, and there is no alert or alarm, the system's screen saver will be activated automatically.

Additional information on system operation and maintenance is provided by the *Quick Reference Guide* and *User Manual* stored on the water production unit.



Full control over pure water quality

In comparison to centralized water delivery installations with a “loop” configuration, stand-alone, reliable Elix® Essential systems give users direct “hands-on” control over water quality. After each purification step, important parameters are checked by the system, including:

- ▶ Feed water pressure and conductivity
- ▶ RO pressure, RO water quality, RO membrane efficiency (% ion rejection), Elix® Essential water quality and temperature

Elix® Essential system **monitoring equipment is best in class**. Reliable resistivity measurement provides control with features such as low cell constant, flow-through resistivity cell design, and temperature compensation at 25 °C.

Key values can be displayed on the **easy-to-read Elix® Essential system LCD display**, letting users check water quality status whenever needed. Any system anomaly is immediately signaled by a change in the color of the highly visible LCD backlight (yellow for alert mode; red for alarm mode).

On another level, **RFID technology** prevents insertion of an incorrect purification cartridge in the Elix® Essential system, and also ensures traceability by registering the catalogue and serial numbers of a new Progard® pack in system memory.

For enhanced data management control, remote access capabilities, and long-term electronic archiving, users can also opt to use their Elix® Essential systems with **Millitrack® software**.

Easy and carefree maintenance

Low maintenance Elix® Essential systems free you to concentrate on your laboratory work. Elix® technology eliminates the need for extra polishing packs or conditioning cartridges, so there is just one Progard® purification pack to change — and the system's **new ergonomic pack locking system** makes this easier than ever to do.

Just pull up on the locking handle to remove the exhausted pack, position the replacement pack in the cabinet, and push down on the handle to lock the new pack in place — it's as simple as that! This is followed by an automatic 15-minute flush cycle, and your system is once again ready for use.

Automatic self-maintenance functions (i.e., flush mode, rinsing mode, sanitization cycle) keep the system's reverse osmosis membrane in top operating condition, and ensure optimal water quality. System sanitization is recommended approximately four times a year, and takes just a few minutes to perform.



The best use of laboratory space

With their **small footprint**, Elix® Essential systems are designed to make the best use of laboratory space. Systems can be placed on or under the bench or wall-installed, depending on your needs. Systems provide 3, 5, 10, or 15 liters of pure water per hour.

Select from a **range of high-quality polyethylene reservoirs** (30–100 liters) to match your water usage. Reservoirs maintain consistent purity of stored water and provide effective protection against airborne contaminants. An optional Automatic Sanitation Module (ASM) can further protect the integrity of stored water with regular exposure to a bactericidal 254 nm UV lamp.



6

Confidence in your water purification system supplier

As one of the top three R&D investors in the Life Science Tools industry and with more than 50 years of experience in water purification systems manufacturing, Merck Millipore is a partner you can count on.

Elix® Essential systems are manufactured in an ISO® 9001 v. 2008 and ISO 14001–v. 2004–registered manufacturing site,* and are certified for safety and electromagnetic compatibility (CE, cUL; FCC).

Additionally, to optimize the performance and lifetime of your water purification system, Merck Millipore offers a complete portfolio of Watercare Pact Service Plans ranging from a single annual checkup to a full system cover.

* Certificates are available upon request.

Elix® Essential system specifications

Pure (Type 2) Product Water Quality	Elix® Essential Systems
Product flow rate +/- 15 %, 7 to 35 °C	3, 5, 10, or 15 l/h
Resistivity of product water	> 5 MΩ·cm at 25 °C, typically 10 to 15 MΩ·cm
TOC	< 30 ppb
Bacteria levels	< 10 cfu/ml for Elix® Essential UV systems
System Information	
Dimensions (H x W x D) mm	H 470 x W 268 x D 339 (18.50 x 10.55 x 13.35 in)
Net weight	12.3-14 kg (32.95-37.51 lb)
Operating weight	17.2-18.5 kg (46.8- 49.57 lb)
Electrical feed voltage	100-230 V +/- 10%
Electrical feed frequency	50-60 Hz
Tap (feed) water connection	1/2" Gaz M
Tap (feed) water pressure	0.5-6 bar

Feed Water Requirements

Water Quality	: Potable tap water	Total chlorine	: < 3 ppm
Conductivity	: < 2000 µS/cm	Minimum feed water pressure	: 1.0 bar (15 psi)
Temperature	: 5-35 °C	Maximum feed water pressure	: 6.0 bar (90 psi)
Fouling index	: < 12*		

* If the fouling index is >12, additional prefiltration is recommended



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Lit. No. MMPLEX001

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